Manual No. 020

Business Practices Manual

Transmission Planning

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This Business Practices Manual (BPM) contains information to augment the filed and accepted Tariff. In all cases the Tariff is the governing document and not the BPMs. Additionally, if not otherwise defined herein, all capitalized terms in this BPM have the meaning as defined in the Tariff.

Time Zone

In 2006, Central Indiana, where MISO offices are located, began observing Daylight Savings Time. However, MISO, its systems, and the Midwest Markets, will continue to do business in Eastern Standard Time year-round.

Revision History

Document Number	Reason for Issue	Revised by:	Effective Date
BPM-020-r8	Annual review completed. Updates include the following items: 1.) Section 4.3.3 – Revised section on Short-term Planning Analysis	M. Dantzler	JAN-17-2013
BPM-020-r7	Updates include the following items: 1.) Annual review completed 2.) Section 2.4.1.3 – New MEP cost allocation 3.) Section 7 – GIP, MEP and MVP cost allocation updates; cost shared projects 4.) Remove Section 6 – Generator Interconnection Planning – Duplicate section in BPM-015, owned by the Generator Interconnection Planning Department	M. Dantzler	SEP-22-2012
BPM-020-r6	Updates include the following items: 1) Additional language in Appendix L to clarify communication 2) Add Appendix M: Critical Facility Methodology	A. Dortch	NOV-15-2011
BPM-020-r5	Section 5: Long Term Transmission Services	P. Muncy/ M. Sutton	SEP-22-2011
BPM-020-r4	Updates include the following items: 3) Multi Value Project Cost Allocation criteria and methodology 4) Shared Network Upgrade methodology 5) Regionally Beneficial Project name change to Market Efficiency Project Reflects Tariff revisions with an effective date of July 16, 2010.	M. Tackett	MAR-09-2011
BPM-020-r3	Appendix J: Additional Language on system reconfiguration and redispatch evaluation for Category C3 events for LODF Calculation Section 2.6.1: Expand on MISO Transmission Provider responsibilities 1) Appendix L: Additional Language on SOL/IROL Methodology	A. Dortch	NOV-20-2010
BPM-20-r2	1) Update to incorporate changes to transmission planning process 2) Update Generator Interconnection section	M. Tackett	OCT-20-2010

BPM-020-r1	Annual Review Completed JUN-16-2010	A. Dortch	JUL-08-2009
TP-BPM-002-r1	Section 4.3.6: Language Changes in MTEP Contingency Selection Process Section 4.3.7.1: Language Changes in MTEP IROL Identification Process Section 4.3.7.8: New Language describing process for planning for feasibility of LTTR's Appendix J: Additional Language on Implementation Rules for LODF Calculation	J. Webb	JUL-08-2009
TP-BPM-002	Original Posting	S. Goodwin	12-07-2007

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1. Introduction

This introduction to MISO *Business Practices Manual (BPM) for Transmission Planning* includes basic information about this BPM and the other MISO BPMs. The first section (Section 1.1) of this Introduction identifies the other BPMs that are available. The second section (Section 1.2) is an introduction to this BPM. The third section (Section 1.3) identifies other documents in addition to the BPMs, which can be used by the reader as references when reading this BPM.

1.1 Purpose of MISO Business Practices Manuals

The BPMs developed by MISO provide background information, guidelines, business rules, and processes established by MISO for the operation and administration of MISO markets, provisions of transmission reliability services, and compliance with MISO settlements, billing, and accounting requirements.

1.2 Purpose of this Business Practices Manual

This *BPM for Transmission Planning* describes MISO's transmission planning process. Also included in this BPM are the former *BPM for Transmission Services, BPM-013,* and *BPM for Generation Interconnection, BPM-015.*

1.3 References

Other reference information related to this BPM includes:

- MISO Tariff (Tariff)
- Agreement of the Transmission Facilities Owners to Organize The Midwest Independent Transmission System Operator, Inc., a Delaware Non-Stock Corporation ("MISO Agreement")
- Other BPMs

1.4 MISO Planning Contacts

MISO planning staff contact details for specific planning functions Contact Client Relations.
https://www.misoenergy.org/StakeholderCenter/ClientRelations/Pages/ClientRelations.aspx

1.5 Defined Terms used in the BPM for Transmission Planning

The following defined terms are used through the BPM for Transmission Planning:

- **Coupled Transmission Issue.** A Transmission Issue that either shares the same root cause as another Transmission Issue or has a solution that is common to another Transmission Issue.
- **Decoupled Transmission Issue.** A Transmission Issue that does not share the same root cause as any other Transmission Issue and does not have a solution that is common to any other Transmission Issue.
- **Dependent Transmission Project.** A proposed transmission expansion project that resolves at least one Coupled Transmission Issue.
- **Non-dependent Transmission Project.** A proposed transmission expansion project that resolves only a Decoupled Transmission Issue and thus can be evaluated independently of the evaluation of proposed solutions to other Transmission Issues.
- **Short-term Transmission Plan.** The group of transmission projects recommended for inclusion in Appendix A in a specific MTEP cycle.
- **Total Plan Benefit-to-cost Ratio.** The benefit-to-cost ratio associated with a specific Short-term Transmission Plan and defined as the ratio of the present value of the total benefit of the Short-term Transmission Plan evaluated over the first twenty years of the Short-term Transmission Plan's life to the present value of the annual revenue requirements of the Short-term Transmission Plan evaluated over the first twenty years of the Short-term Transmission Plan's life.
- **Total Plan Value.** The total value generated by a specific Short-term Transmission Plan and defined as the difference between of the present value of the total benefit of the Short-term Transmission Plan evaluated over the first twenty years of the Short-term Transmission Plan's life and the present value of the annual revenue requirements of the Short-term Transmission Plan evaluated over the first twenty years of the Short-term Transmission Plan's life.
- **Transmission Issue:** A reason to improve, expand or modify the Transmission System. These reasons may be compliance-based, economic-based, or reflect other local needs. Compliance-based reasons reflect the need to comply with all requirements imposed on the Transmission System performance by entities with jurisdiction or authority over all or part of the Transmission System including, but not necessarily limited to, i) compliance with Applicable Reliability Standards including

NERC standards and applicable Regional Entity standards, ii) compliance with local reliability standards and requirements when applicable, iii) compliance with Transmission Owner standards if applicable, iv) compliance with applicable state and federal laws and v) compliance with applicable regulatory mandates and obligations, including regulatory obligations related to serving load, interconnecting generation and providing transmission service. Economic-based reasons reflect the opportunity or obligation to provide added economic value to Transmission Customers through specific expansions of the Transmission System, where added economic value is the difference between the financially quantifiable benefits associated with specific expansions to the Transmission System and the financially quantifiable costs of those expansions. Economic value may be incremental to the value achieved from meeting a compliance requirement, or may stand on its own.

- **Transmission Compliance Issue.** A Transmission Issue resulting from the need to comply with all requirements imposed on the Transmission System performance by entities with jurisdiction or authority over all or part of the Transmission System including, but not necessarily limited to, i) compliance with Applicable Reliability Standards including NERC standards and applicable Regional Entity standards, ii) compliance with local reliability standards and requirements when applicable, iii) compliance with Transmission Owner standards and criteria if applicable, iv) compliance with applicable state and federal laws and v) compliance with applicable regulatory mandates and obligations, including regulatory obligations related to serving load, interconnecting generation and providing transmission service.
- **Transmission Value Issue.** A Transmission Issue resulting from the opportunity or obligation to provide added economic value to Transmission Customers through specific expansions of the Transmission System, where added economic value is the difference between the financially quantifiable benefits associated with specific expansions to the Transmission System and the financially quantifiable costs of those expansions. A Transmission Value Issue may be incremental to the resolution of a Transmission Compliance Issue or may stand on its own.

2 Overview of Transmission Planning

2.1 MISO Transmission Planning Objectives

MISO regional transmission planning process has as its goal the development of a comprehensive expansion plan that meets both reliability and economic expansion needs. The planning process identifies solutions to reliability issues that arise from the expected dispatch of Network Resources. These solutions include evaluating alternative costs between capital expenditures for transmission expansion projects, and increased operating expenses from re-dispatching Network Resources or other operational actions.

At the start of 2006, the Transmission Provider Board adopted five planning principles to guide MISO regional plan:

- Make the benefits of a competitive energy market available to customers by providing access to the lowest possible electric energy costs.
- Provide a transmission infrastructure that safeguards local and regional reliability.
- Support State and Federal renewable energy objectives by planning for access to all such resources (e.g. wind, biomass, demand-side management).
- Create a mechanism to ensure that investment implementation occurs in a timely manner.
- Develop a Transmission System scenario model and make it available to State and Federal energy policy makers to provide context and information regarding potential policy choices.

Also, it is MISO's goal for the planning process to be fully compliant with the Planning Principles presented in the Federal Energy Regulatory Commission's (FERC) Order Nos. 890 and 890-A. In Order No. 890, FERC identified nine planning principles "that must be satisfied for a transmission provider's planning process to be considered compliant with the Final Rule". MISO has incorporated each of the following principles into its planning process, and describes their functions in this Manual.

FERC Order No. 890 Planning Principles

(I) Coordination

(II) Openness

(III) Transparency

(IV) Information Exchange

(V) Comparability

(VI) Dispute Resolution

(VII) Regional Participation

(VIII) Economic Planning Studies

(IX) Cost Allocation for New Projects

2.2 Transmission Planning Functions and Cycles

2.2.1 Planning Functions

The development of the overall MISO Transmission Plan encompasses multiple planning functions addressing different phases and aspects of transmission planning. These functions include:

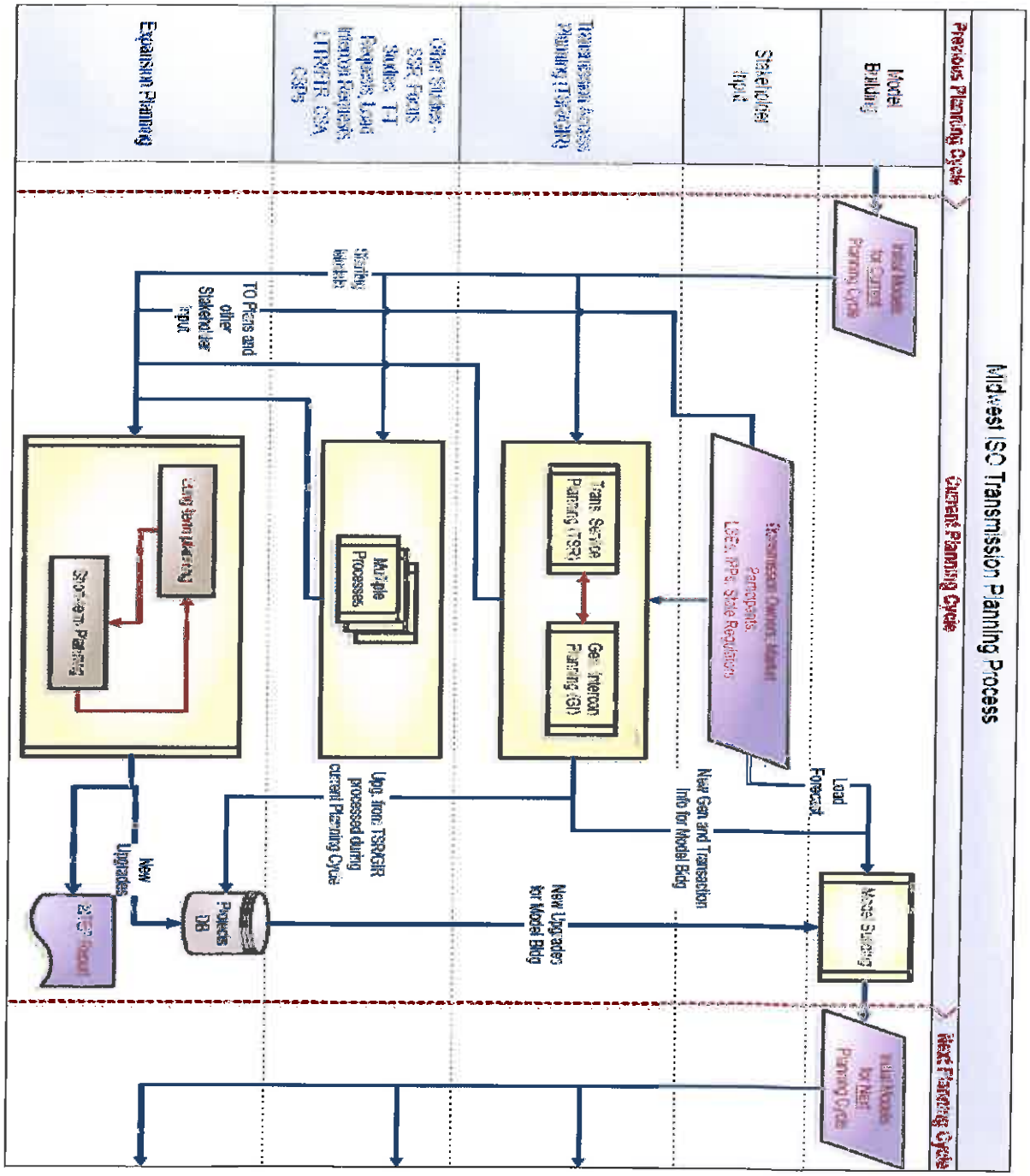
- Model Development
- Cyclical Baseline Reliability and Economic Planning
- Transmission Access Planning
  - Generator Interconnection Planning
  - Transmission Service Planning
- Coordinated Inter-regional Planning (with other RTOs/Regions)
- Non-cyclical Planning Needs
- System Support Resource (SSR) Studies for unit de-commissioning
- Transmission Interconnections
- Load Interconnections
- Focus Studies - Studies initiated during the cyclical baseline planning process that cannot wait until the next planning cycle (for example, NERC/FERC directives, near-term critical operational issues)

Each of these functions is described in this BPM.

2.2.2 Integration of Planning Functions to Produce MTEP

The various planning functions occur at differing times. For example, the TSG and GIR processes occur on a continuous basis in response to customer requests for service. The Baseline planning function repeats on a regular cycle, with an MTEP report produced each 12 months. Each of these processes informs the other at the commencement of each functions cycle, as shown in Figure 2.2-1 below.

Fig 2.2-1: High-level Planning Process Flow Diagram



2.3 Project Appendices in the Projects Database

This section describes the requirements for a project to be categorized in either Appendix A, B, or C of the MTEP and the process by which projects progress through these Appendices.

MTEP Appendix C

Appendix C projects are projects which are proposed by Transmission Owners, Stakeholders, or MISO planning staff for which specific needs have not yet been established, but that are thought by sponsor to be a potentially beneficial expansion, and for which the sponsor has provided to MISO a description of the potential need or benefit. All newly proposed projects start as Appendix C projects in the MTEP planning process. These could also include transmission projects which are conceptual in nature and in the early stages of planning. Appendix C projects are not included in MTEP initial power-flow models used to perform baseline reliability studies since the needs or the effectiveness of these projects are yet to be verified. In order to advance to Appendix B, Appendix C projects must be matched as a potential solution to an identified reliability, policy or other need, or to an identified cost savings or other benefit.

MTEP Appendix B

Appendix B projects are projects that are demonstrated to be a potential solution to an identified reliability, policy or other need, or to an identified cost savings or other benefit. In the MTEP development process, an initial needs or potential benefit analysis is performed based on applicable criteria. Once a need or potential benefit is identified, potential solutions from Appendix C are tested for effectiveness in meeting the needs or providing the benefits. Appendix C projects with verified needs and effectiveness are then moved to Appendix B as potential needs to an expansion driver. It is possible that there could be several alternative Appendix B projects to address the same planning issue or need. Projects will remain in Appendix B until the evaluation process for selecting the preferred solution among alternatives is completed.

MTEP Appendix A

Appendix A projects are projects that have been justified to be the preferred solution to an identified reliability, policy or other need, or to achieve an identified cost savings or other benefit and that have been approved by the Transmission Provider Board. The project justification process includes consideration of a variety of factors including urgency of need and comparison

from amongst alternatives of operating performance, initial investment costs, robustness of the solution, longevity of the solution provided, and performance against other economic metrics. Pending Appendix A projects are recommended for approval by the Transmission Provider Board. Once a project is approved by the Transmission Provider Board as an Appendix A project, the project is implemented in accordance with the Owners Agreement and the Tariff. Projects in Appendix A may be generated from the baseline planning process, or from the generator interconnection or Transmission Service request study processes. Projects in Appendix A may be eligible for regional cost sharing per provisions in Attachment FF of the Tariff, and are categorized according to their cost sharing eligibility. See Section 2.4 of this BPM (MTEP Project Categories) for descriptions of the different categories of Appendix A projects. See Section 8.0 (Cost Allocation Process) for details on eligibility criteria and cost allocation methodologies.

The general process flow steps associated with MTEP projects from inception to approval is described below. A process flow chart for the same is shown in Fig 2.3-1 below.

(I) Projects get into Appendix C as a result of one of the following

- Developed by Transmission Owner as a potential solution to a local planning need and submitted to the MTEP planning process
- Developed by MISO planning staff in collaboration with Transmission Owners and other stakeholders during the planning process as a potential solution for a need or as a value based economic project
- Moved from Appendix B to Appendix C due to a previously identified need no longer being valid or the solution no longer being effective or efficient

(II) Move Projects from Appendix C to Appendix B

It is important to understand that many proposed solutions represent projects that 1) are low cost, 2) are not cost shared, 3) address a single local Transmission Issue such as the projected violation of a single NERC TPL standard and 4) are clearly the preferred solution for the specific Transmission Issue being addressed. Under these types of scenarios, engineering judgment will be exercised by MISO to determine if it is necessary to employ comprehensive effectiveness testing as described below.

- MISO planning staff will work with Transmission Owners and other stakeholders to perform long-term planning as described in Section 4.4 of this document to develop alternative solutions to one or more Transmission Issues where Transmission Issues include Transmission Compliance Issues and Transmission Value Issues.
- An effectiveness test will be used to verify whether a solution, which can be one or more proposed projects, effectively resolves Transmission Compliance Issues and/or address Transmission Value Issues. MISO planning staff will work with Transmission Owners and other stakeholders to perform the effectiveness testing.
- In order to be considered effective, a proposed solution must i) effectively resolve one or more Transmission Compliance Issues; or ii) address one or more Transmission Value Issues within the long-term planning horizon.
- Effectiveness testing for Transmission Compliance Issues will involve testing a proposed solution to ensure it resolves one or more Transmission Compliance Issues.

  Effectiveness testing for Transmission Compliance Issues will involve testing proposed transmission solutions against generation and load models that comply with state and federal laws, regulatory obligations and regulatory mandates to ensure compliance with applicable NERC, Regional Entity, and, when appropriate, local and Transmission Owner reliability standards. Effectiveness testing against reliability standards for the purpose of determining Appendix B inclusion will include thermal and voltage limit analyses only and may include stability analysis where it is determined necessary by MISO.

- Effectiveness testing for Transmission Value Issues will involve modeling a proposed transmission solution to determine if the present value of: i) annual production costs savings; ii) resource capacity cost savings; and, iii) other financially quantifiable benefits related to the provision of Transmission Service is greater than the present value of the annual revenue requirements of the proposed solution over the first 20 years of the solution's life.
- Stakeholders will review results of effectiveness testing and provide input.
- MISO staff will perform additional analyses and modify proposed solutions as needed based on stakeholder feedback.
- A proposed project will be included in Appendix B of the MTEP if the project is shown to effectively resolve one or more Transmission Compliance Issues or addresses one or more Transmission Value Issues when evaluated over a period of 20 years. For proposed projects that address both Transmission Compliance Issues and Transmission Value Issues, all that is necessary for Appendix B inclusion is to demonstrate the ability to address one or more Transmission Compliance Issues, thus detailed value assessment of such a project is not required until consideration for Appendix A inclusion.
- Potential projects driven by specific Generation Interconnection Requests or Transmission Service Requests that are not required to be constructed within the short-term planning horizon will also be included in Appendix B.

(III) Review Process for Inclusion in Appendix A

- MISO planning staff will work with Transmission Owners and other stakeholders to perform short-term planning as described in Section 4.3 of this document to develop solutions to one or more short-term Transmission Issues where short-term Transmission Issues include Transmission Compliance Issues and Transmission Value Issues within the short-term planning horizon. There is no requirement that a project must have an in-service date within the short-term planning horizon to be eligible for inclusion in Appendix A if other considerations (e.g., project lead times, etc.) warrant inclusion of the project in Appendix A in a given MTEP cycle.

- In developing solutions for short-term Transmission Issues, MISO planning staff will work with Transmission Owners and other stakeholders (via SPMs, the PS and the PAC) to identify projects from Appendix B and, when necessary or prudent, other potential sources that will assist in addressing one or more short-term Transmission Issues.
- All projects contained within Appendix B will be considered for inclusion in Appendix A.
- MISO planning staff review cost estimates of identified potential projects with Transmission Owners and other stakeholders through the SPM process.
- It is expected that most Transmission Issues being addressed by short-term planning will be decoupled. A Decoupled Transmission Issue is a Transmission Issue that does not share the same root cause as any other Transmission Issue and does not have a solution that is common to any other Transmission Issue. For this reason, solutions to Decoupled Transmission Issues are Non-dependent Transmission Projects, where a Non-dependent Transmission Project is any transmission project that can be selected to address a specific Transmission Issue without regard to how other Transmission Issues are being resolved.
- In accordance with Appendix B of the ISO Agreement, a Transmission Owner shall have the right to require the inclusion of any specific transmission project directly associated with the Transmission Owner's transmission system into Appendix A of a specific MTEP as long as such project does not result in system performance that is inconsistent with applicable reliability criteria. Such projects will be considered Non-dependent Transmission Projects regardless of whether or not the Transmission Issues being addressed are Decoupled Transmission Issues. Such a project will not be eligible for cost sharing as a Baseline Reliability Project, Market Efficiency Projector Multi Value Project if the project would not otherwise be approved for construction in the MTEP.
- While it is expected that most Transmission Issues will be decoupled, it is also expected that a number of Transmission Issues will be highly coupled. That is, selection of the best project to resolve a specific issue is highly dependent on the solutions selected for other Transmission Issues being addressed by the Short-term Transmission Plan. This type of project will be referred to as a Dependent Transmission Project.
- In order to evaluate portfolios of Dependent Transmission Projects, MISO planning staff in collaboration with Transmission Owners and other stakeholders will determine if alternative Short-term Transmission Plans should be considered, and if so, will develop

alternative Short-term Transmission Plans where each alternative Short-term Transmission Plan represents a specific set of proposed projects for Appendix A. Each alternative Short-term Transmission Plan must resolve all Transmission Compliance Issues in the short-term planning horizon, must allow for Transmission Compliance Issues to be resolved in the long-term planning horizon when project lead times are an issue and should address Transmission Value Issues that commence in the short-term planning horizon, where Transmission Value Issues only exist when there is a solution with costs that are lower than the financially quantifiable benefits produced by the solution. Each alternative Short-term Transmission Plan will contain all of the Non-dependent Transmission Projects, since inclusion of Non-dependent Transmission Projects in Appendix A does not require evaluation of the overall Short-term Transmission Plan. However, alternative portfolios of Dependent Transmission Projects will be assigned to each alternative Short-term Transmission Plan to accurately determine which set of Dependent Transmission Projects should be incorporated into the Short-term Transmission Plan and ultimately transferred to Appendix A to address the Coupled Transmission Issues.

- MISO planning staff in collaboration with Transmission Owners and other stakeholders will evaluate the alternative Short-term Transmission Plans to ensure they resolve all Transmission Compliance Issues. MISO planning staff will determine and review with Transmission Owners and other stakeholders the Total Plan Value and Total Plan Benefit-to-cost Ratio associated with each alternative Short-term Transmission Plan where Total Plan Value and Total Plan Benefit-to-cost Ratios are described in Section 4.3.11 of this document.
- Any alternative Short-term Transmission Plan that meets one of the following criteria will be analyzed further whereas all other alternative Short-term Transmission Plans will be discarded.
    i. The alternative Short-term Transmission Plan providing the highest Total Value as described in Section 4.3.11.1 of this document.
    ii. The alternative Short-term Transmission Plan providing the highest Total Plan Benefit-to-cost Ratio as described in Section 4.3.11.2 of this document.

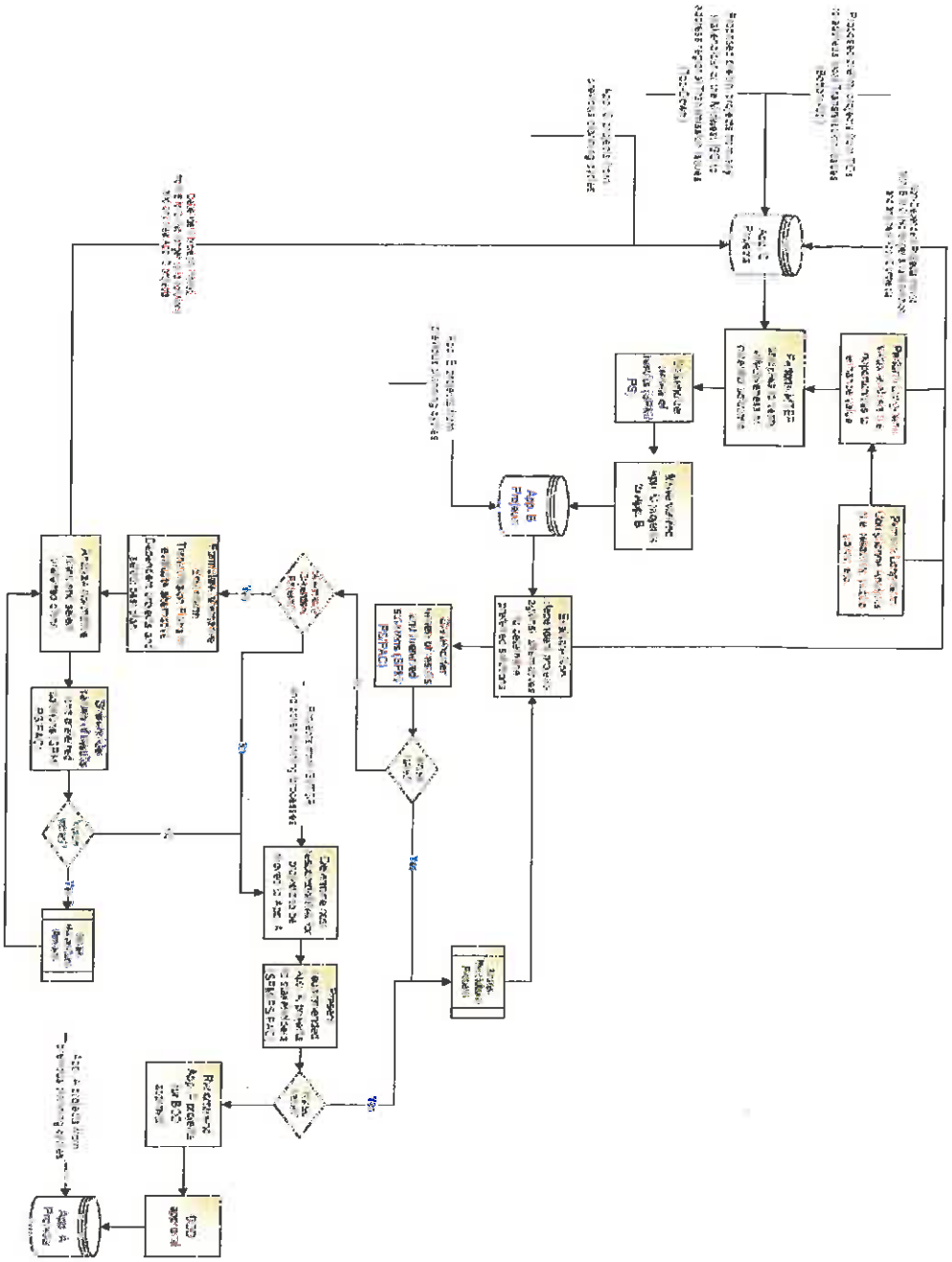
iii. Any alternative Short-term Transmission Plan with a Total Plan Value greater than or equal to 75% of the highest Total Plan Value of all alternative Short-term Transmission Plans and a Total Plan Benefit-to-cost Ratio greater than or equal to 75% of the highest Total Plan Benefit-to-cost Ratio of all alternative Short-term Transmission Plans.

- MISO planning staff in collaboration with Transmission Owners and other stakeholders will evaluate the alternative Short-term Transmission Plans that qualify for further analysis (i.e., the alternative Short-term Transmission Plans meeting one or more of the criteria specified in the proceeding bullet) based on the factors listed in Section 4.3.11.4 of this BPM to determine the preferred Short-term Transmission Plan.
- MISO will include a section in the MTEP report explaining how the factors in the preceding bullet were applied by MISO, Transmission Owners and other stakeholders to determine the preferred alternative Short-term Transmission Plan.
- All projects included in the alternative Short-term Transmission Plan selected as the preferred Short-term Transmission Plan will be moved to Appendix A.

(IV) Additional Notes Related to Appendix A Inclusion

- The Issues Resolution process will be used to address any issues with planning assumptions and criteria used.
- Appendix A will also include any projects initiated and developed though other planning processes for Interconnection Requests and Transmission Service requests.
- MISO planning staff will determine cost responsibilities for the projects to be recommended as Appendix A.
- MISO planning staff will present the recommended Appendix A projects to stakeholders.
- The Issues Resolution process will be used to address any cost allocation issues.
- MISO planning staff recommends new Appendix A projects for approval by the Transmission Provider Board and for implementation by Transmission Owners.

Fig 2.3-1: MTEP Projects C to B to A process



2.4 MTEP Appendix A Project Categories for Cost Allocation Purposes

The MTEP will identify the following types of Appendix A expansion projects for inclusion in the MTEP.

2.4.1.1 Baseline Reliability Projects (BRP)

Baseline Reliability Projects are Network Upgrades identified in the base case as required to ensure that the Transmission System is in compliance with applicable national Electric Reliability Organization ("ERO") reliability standards and reliability standards adopted by Regional Reliability Organizations and applicable to the Transmission Provider. BRPs include projects that are needed to maintain reliability while accommodating the ongoing needs of existing Market Participants and Transmission Customers. BRPs may consist of a number of individual facilities that in the judgment of the Transmission Provider constitute a single project for cost allocation purposes. The Transmission Provider will collaborate with Transmission Owners and with other transmission providers to develop appropriate planning models that reflect expected system conditions for the planning horizon. The planning models will reflect the projected load growth of existing network customers and other transmission service and interconnection commitments, and will include any transmission projects identified in Service Agreements or interconnection agreements that are entered into in association with requests for transmission delivery service or transmission interconnection service, as determined in Facilities Studies associated with such requests. The Transmission Provider will test the MTEP for adequacy and security based on commonly applicable national Electric Reliability Organization ("ERO") standards, and under likely and possible dispatch patterns of actual and projected Generation Resources within the Transmission System and of external resources, and will produce an efficient expansion plan that includes all BRPs determined by the Transmission Provider to be necessary through the planning horizon of the MTEP. The Transmission Provider will obtain the approval of the Transmission Provider Board, as set forth in Section VI, for each MTEP published. BRPs need to meet the cost thresholds specified in Attachment FF in order to be eligible for cost sharing.

2.4.1.2 New Transmission Access Projects (TAP)

New Transmission Access Projects are derived from the Facilities Studies as Generator Interconnection Projects and Transmission Delivery Service Projects, which are described below. Please see Section 5.0 (TSR) and Section 6.0 (GI) of this manual for process details on TAPs.

I) Generation Interconnection Projects (GIP)

Generation Interconnection Projects are Network Upgrades associated with interconnection of new, or increase in generating capacity of existing, generation under Attachments X to the Tariff. These projects are driven by interconnection study procedures and agreements. The Interconnection Customer is responsible for 100 percent of the costs of Network Upgrades rated below 345 kV and 90 percent of the costs of Network Upgrades rated at 345 kV and above (with the remaining 10 percent being recovered on a system-wide basis. For interconnection customers interconnecting to American Transmission Company (ATC LLC) transmission systems and meeting certain eligibility requirements, 50% of the Network Upgrade cost is allocated entirely to ATC LLC pricing zone and the remaining 50% is allocated to affected pricing zones based on sub-regional and/or postage-stamp allocation rules described under Attachment FF. A similar treatment is applicable to interconnection customers interconnecting to ITC/ITCM/METC transmission systems and meeting certain eligibility requirements.

II) Transmission Delivery Service Projects (TDSP)

Transmission Delivery Service Projects are Network Upgrades driven by Transmission Service Request (TSR) study procedures and agreements. These upgrades are needed to respond to requests for new Point-To-Point Transmission Service, or requests under Module B of the Tariff for Network Service or a new designation of a Network Resource. Cost of these upgrades are either directly assigned or rolled-in as per Attachment N of the Tariff.

2.4.1.3 Market Efficiency Projects (MEP)

Market Efficiency Projects are Network Upgrades: (i) that are proposed by the Transmission Provider, Transmission Owner(s), ITC(s), Market Participant(s), or regulatory authorities; (ii) that are found to be eligible for inclusion in the MTEP or are approved pursuant to Appendix B, Section VII of the ISO Agreement after June 16, 2005, applying the factors set forth in Section I.A. of Attachment FF; (iii) that have a Project Cost of $5 million or more; (iv) that involve facilities with voltages of 345 kV or higher[1] ; and that may include any lower voltage facilities of 100kV or above that collectively constitute less than fifty percent (50%) of the combined project cost, and without which the 345 kV or higher facilities could not deliver sufficient benefit to meet the required benefit-to-cost ratio threshold for the project as established in Section II.B.1.e, or that otherwise are needed to relieve applicable reliability criteria violations that are projected to occur as a direct result of the development of the 345 kV or higher facilities of the project; (v) that are not determined to be MVPs and (vi) that are found to have regional benefits under the criteria set forth in Section II.B.1. of Attachment FF.

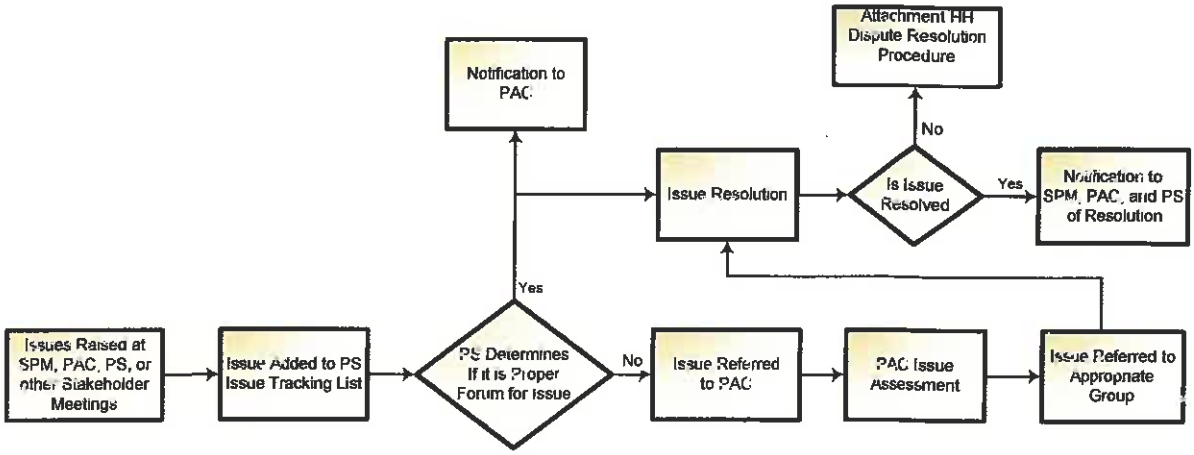
2.4.1.4 Other Projects

Other projects are defined as projects that are not covered by the project categories described above, but are included in an MTEP report. These could include, (i) Transmission Owner initiated reliability projects driven by local reliability planning criteria, (ii) Transmission Owner initiated economic projects that do not meet Attachment FF economic inclusion criteria, and (iii)Transmission Owner initiated projects that may prove to be MEP or cost shared BRP but for which MISO has not yet determined the cost sharing of, but that the Transmission Owner requires (for state regulatory proceedings or other cost recovery reasons under the Tariff) be included in the MTEP. The cost responsibility for these "Other Projects" is per the ISO Agreement through Attachment O recovery until such time as MISO were to complete analyses sufficient to reclassify the project(s) as an MEP or BRP with other appropriate cost sharing methodologies described herein.

[1] Transformer voltage is defined by the voltage of the low-side of the transformer for those purposes.

2.5 Issues Resolution Process Prior to Tariff Dispute Resolution Procedure (Attachment HH)

Fig. 2.5-1 Issues Resolution Process Diagram



During the Stakeholder review (i.e. SPM, PS, or PAC) of results and preferred solutions to Appendix B projects or after cost responsibilities for projects to be moved to Appendix A are determined an issue with the project may be raised and at that point the issue will follow the process illustrated in Figure 2.5-1 above.

After an issue has been raised about a project the next step will be to determine which party is the correct one to address the issue. The Planning Advisory Committee will use the following general guidelines to determine what group addresses the issue:

- High-level policy related issues will be addressed by the PAC
- Technical issues will be directed to the Planning Subcommittee
- Ad Hoc Task Force will be formed for issues that require three or more days of work from individuals outside the committee structure (i.e. market operations, rate experts, etc.) or additional expertise on planning issues not readily available in the committee.
- Short-term work group may be formed to develop proposals to address an issue and bring that work back to the PAC or PS for consideration.

Once an issue has been referred to the proper working group (including a temporary short-term task force) the issue will be resolved following MISO Governance Process. The process will include the following:

- Working sessions, including research and data gathering will occur for the timeframe necessary to develop a recommendation (motion) for resolution to the issue.
- A motion, based on the outcome of the working sessions, will be presented and seconded.
- Debate will occur on the resolution.
- Committee participants will vote on the resolution.
- That recommendation will be presented to the parent committee(s) (i.e. SPM, PAC, or PS) and MISO. Recommendations are non-binding and will represent the advice of the committee to affected parties.

In the event that affected parties are not satisfied with the recommended resolution or an agreed upon resolution cannot be reached the affected parties may move to the Dispute Resolution Procedure in Attachment HH of the Tariff.

2.6 General Process Responsibilities

2.6.1 Transmission Provider (MISO)

MISO is the NERC Planning Authority for its member footprint, and performs regional planning in accordance with FERC Planning Principles delineated in Order 890. These Planning Principles provide mechanisms to ensure that the regional planning process is open, transparent, coordinated, includes both reliability and economic planning considerations, and includes mechanisms for equitable cost sharing of expansion costs. MISO, through the regional planning process, integrates the local planning processes of its member companies and the advice and guidance of stakeholders into a coordinated regional transmission plan and identifies additional expansions as needed to provide for an efficient and reliable transmission system that delivers reliable power supply to connected load customers, expands trading opportunities, better integrates the grid, alleviates congestion, provides access to diverse energy resources, and enables state and federal energy policy objectives to be met. MISO planning staff will produce regional plan reports no less frequently than biennially, and will make such plans publicly available on the MISO web site.

MISO planning staff is responsible for conducting the regional planning process, including the organization and facilitation of stakeholder meetings and committees that advise the planning staff and the Transmission Provider Board.

In producing the integrated and coordinated regional transmission plan, MISO adheres to the provisions of the tariff and the Business Practices Manuals, including this BPM. MISO planning staff is responsible for establishing the timelines and requirements for, and performing the actions necessary to complete each of the key milestones below in the regional planning process:

a. Model development
b. Testing models against reliability and economic planning criteria
c. Collaborative development of possible solutions to identified issues
d. Selection of preferred solution
e. Determination of funding and cost responsibility
f. Monitoring progress on solution implementation

MISO planning staff is responsible for developing regional planning models and for providing the requirements and timelines for exchange of information with Load Serving Entities (LSEs), Generation Owners, Transmission Customers, Transmission Owners, and neighbouring Transmission Entities necessary for model development. Such information includes load forecasts and geographic distribution of such forecasts on a transmission substation basis, generating resource commitments, Generator operational and economic performance data, and existing and proposed transmission upgrades. MISO planning staff is responsible for making models available for stakeholder review with appropriate protection of CEII and commercially sensitive data.

MISO planning staff is responsible for developing a Study Plan and arranging for Stakeholder meeting(s) with the SPMs, PS, and PAC for collaborative input and refinement of the planning scope, project definition and purpose, work assignments and responsibility, scheduling, cost analysis, alternatives, and assumptions.

MISO planning staff is responsible for testing regional models to identify performance of the models against national reliability standards, and for identifying opportunities for economic expansions that meet established economic planning criteria, and that are necessary to

efficiently meet state and federal energy policy objectives over short, intermediate and long-term planning horizons (1-5, 6-10, 11-20 years). MISO planning staff is responsible for evaluating alternative solutions to identified needs, and for working with Transmission Owners and other stakeholders to identify recommended solutions. Identification of recommended solutions includes consideration of a variety of factors including urgency of need, energy policy mandates, and comparisons amongst alternatives over the planning horizon of initial investment costs, operating performance, robustness of the solution, longevity of the solution provided, and performance against other economic and non-economic metrics as developed with stakeholders.

MISO planning staff evaluates recommended projects for cost allocation in accordance with the Tariff provisions, and for presenting the results of cost allocation calculations to stakeholders for review and comment. MISO planning staff provides projections of annual cost responsibilities by pricing zone associated with cost sharing.

MISO planning staff is responsible for directing the preparation of a preliminary MTEP report proposing new projects, modifications to existing projects and proposing alternative solutions to deficiencies identified in the assessment process, for presenting the highlights of the report to stakeholders, and for distributing the report to stakeholders for written comments.

MISO planning staff is responsible for preparing the final draft of the comprehensive MTEP Plan. MISO planning staff is responsible for presenting the comprehensive MTEP Plan to the Transmission Provider Board (Biennial Plan and annual update reports) for approval. MISO planning staff is then responsible for posting the Transmission Provider Board-certified plan on the MISO website and issuing it to regulatory authorities and other requesting parties and for monitoring and reporting the MISO construction implementation process.

Finally, to the extent assistance is needed by the affected transmission owners or designated entities in justifying the need for and obtaining certification of any facilities required by the approved MTEP, MISO shall prepare and present testimony in any proceedings before state or federal courts, regulatory authorities, or other agencies as may be required.

2.6.2 Transmission Owners

In accordance with the ISO Agreement, each Transmission Owner engages in local system planning in order to carry out its responsibility for meeting its respective transmission needs in collaboration with MISO and subject to the requirements of applicable state law or regulatory authority. In meeting its responsibilities under the ISO Agreement, the Transmission Owners may, as appropriate, develop and propose plans involving modifications to any of the Transmission Owner's transmission facilities which are part of the Transmission System. In developing proposed plans, the Transmission Owners will adhere to any applicable state or local regulatory planning processes. Proposed plans developed by the Transmission Owners for potential inclusion in the regional plan are evaluated and discussed with stakeholders through the annual regional planning process as described further in this BPM.

Each Transmission Owner must submit to the Transmission Provider on an annual basis and at a time to be determined by the Transmission Provider, which shall be prior to the beginning of each regional planning cycle, all proposed transmission plans for both transferred and Non-transferred Transmission Facilities. Transmission Owners participate in subregional planning meetings (SPMs) in their respective planning subregions as per the Transmission Provider's meeting schedule, and in regularly scheduled Planning Subcommittee meetings. Transmission Owners may be requested by MISO planning staff to present their proposed projects to stakeholders at SPMs or Planning Subcommittee meetings and discuss the justifications, alternatives, estimated costs, expected service dates, and other aspects of proposed projects with stakeholders. In the alternative, MISO planning staff may present this information to stakeholders, and the Transmission Owners are required to provide representatives that can support these discussions and respond to stakeholder questions about project details.

Transmission Owners are responsible for supporting and participating in the development of MISO and Inter-RTO planning models. The Transmission Owners will be responsible for preparing and updating any detailed power system models they may need for their own use, or for meeting modeling requirements of Regional Entities or other planning groups. Transmission Owners are encouraged to use the same, or very nearly the same models for their own planning purposes as developed collaboratively with MISO in order to maintain maximum consistency between planning results obtained from alternative models of the same planning horizon.

Transmission Owners are responsible for applying their expert knowledge of the strengths and weakness of their respective transmission systems to the evaluation of all projects in the MISO Plan affecting their respective transmission systems.

Finally, Transmission Owners are responsible for the good faith implementation including land acquisition, regulatory permitting and construction of Transmission Provider Board-certified expansion projects.

2.6.3 Generation Owners

Generation Owners are responsible for providing modeling data used by MISO and Transmission Owners for load flow, short circuit, dynamic stability and other future studies as needs arise. Generation Owners are responsible for meeting regulatory reliability standards and reliability planning clauses in their agreements with Transmission Owners and Service Agreements, as applicable. The facility plans developed with the Generation Interconnection Studies and Generator Agreements will be an essential part of MISO Transmission Owner expansion plans to enable competitive generator markets. Generation Owners are encouraged to participate in the planning process through the stakeholder input and review phases of the planning process.

2.6.4 Load Serving Entities

Load Serving Entities will be responsible for annually making and providing MISO with forecasts of Network Load in accordance with Section 29.2 and Module E of the Tariff [MISO is presently considering which of these two reporting requirements is most appropriate for providing LSE load forecast information]. This includes the requirement to provide the amount and location of interruptible load and the needed Network Resource information. Firm Transmission Service Customers are responsible for identifying POR/POD information as required in the MISO OASIS automation system and Tariff reservation and scheduling requirements. LSEs are encouraged to involve themselves in the MISO planning process by participating in the Stakeholder input and review phases of the planning process.

2.6.5 Transmission Customers

Transmission Customers will have the same planning responsibilities as LSEs. Accurate Load Forecasts and assistance in modeling multi-regional load transfers are an integral requirement in the determination of future system expansion plans. Facility Studies conducted to meet Transmission Customer Long Term Firm Transmission Service request and reservations are a vital part of MISO Transmission Owner expansion plans. Transmission Service Customers are encouraged to involve themselves in the MISO planning process by participating in the Stakeholder input and review phases of the planning process.

2.6.6 Other Regional Transmission Operators (RTOs)

The participating RTOs under an inter-RTO cooperation process will be responsible for identifying Network Upgrades through their respective organization procedures and their proposed Integrated Regional Expansion Plans including Generator Interconnection Studies that significantly impact one another. The Joint RTO Transmission Planning Committee and Subcommittees cooperatively determine and facilitate any required Coordination Studies. The affected RTOs use their respective organizational planning procedures (MTEP collaborative process) to complete the coordination studies. The proposed consolidated facilities resulting from the coordination expansion studies are be presented to the Joint RTO transmission planning and relevant subcommittees for review. The resulting recommended Inter-RTO coordinated expansion plans are compiled in a report. MISO Inter-RTO coordinated facilities are combined with MISO Intra-MISO expansion plans. The resulting consolidated plan will be submitted for approval to the Transmission Provider Board for certification. After certification by the participating RTOs, construction programs will commence to implement their respective facility responsibilities. The Intra-MISO and Inter-RTO facilities will be constructed as required in the MISO Agreement as well as MISO and Transmission Owners Tariffs. All facility expansions must be effectively coordinated and expeditiously constructed. Further, Inter-RTO facilities require additional Inter-RTO coordination.

2.6.7 Other Stakeholders (Including State Regulatory Commissions)

Stakeholders, including State Regulatory Commissions, provide MISO with critical stakeholder input and review of transmission expansion projects in the MTEP Plan as they are developed and updated. The State Commission inputs related to projections of load growth, resource requirements, transmission siting authority and environmental concerns assist MISO in the development of realistic transmission expansion projects and alternatives to meet the needs of their citizens as well as neighboring regions. Since all MISO planning meetings are open to all Stakeholders, Stakeholders are responsible for attending as their interest dictates. Communication avenues such as electronic mail and the MISO website, along with open discussion periods in scheduled meetings, allow stakeholders to effectively participate in the MTEP planning process.

2.7 Treatment of Confidential Data

The Transmission Provider will utilize a Non-Disclosure and Confidentiality Agreement (NDA) to address sharing of Critical Energy Infrastructure Information (CEII) transmission planning information. FTP sites containing such information will require such agreements to be executed to obtain access. Stakeholder meetings at which CEII information will be available will be noticed to email exploders that will require execution of NDAs for inclusion. In the alternative, such meetings will be structured to have separate discussion of issues involving CEII data only with participants that agree to execute the NDA. Confidential information related to economic (e.g., congestion) studies, as well as CEII, is sensitive information which must remain confidential. The Transmission Provider will use generic (publicly available) cost information from industry sources in the economic studies to prevent accidental release of confidential information and promote a truly open process because results of economic studies are available to all interested parties.

3 Model Development

3.1 Introduction

This section describes MISO power flow model development processes through the Model-On-Demand (MOD) tool as applicable to the various planning functions discussed in this manual.

3.2 Base Model Development for Planning Studies

The planning functions described below will provide input to the planning model development process through MOD. These planning functions will also specify criteria to output planning models from the MOD as needed to perform the specific planning studies.

- Base Models (PSS/E) for MTEP Reliability Analyses
- Base Models (PSS/E) for MTEP Economic Studies (Additional post processing outside MOD will be needed to prepare PROMOD economic models)
- Base Models (PSS/E) for Generator Interconnection Studies
- Base Models (PSS/E) for Transmission Service Request Studies
- Base Models (PSS/E) for other Non-cyclical planning studies

3.2.1 Model Development Timeline, Key Milestones, and Responsibilities

Figure 3.2.1 below shows a general overview of the Planning Model Building Development process through MOD. The key process steps are explained below and Table 3.2-1 below identifies the planning model development timeline, key milestones, and responsibilities.

3.2.1.1 Initiate Base Model Development for the Next Planning Cycle

MISO planning staff in consultation with PS/PAC determines the planning study years and seasons for which the base models need to be developed for the next planning cycle. Factors taken into consideration in determining the base model years/seasons include, study horizon used for the previous planning cycle, model years/seasons considered by NERC series models and neighboring coordinated systems, NERC standard compliance requirements, and other specific planning study requirements.

MISO will then request Transmission Owners and other stakeholders to submit model updates in order to build base models for the next planning cycle.

3.2.1.2 Update Models

Before the beginning of the next planning cycle Transmission Owners submit PSS/E IDEVS ("MOD project files") to MOD for new Appendix C "candidate" projects. Also, Transmission Owners review Appendix A, Appendix B, and Appendix C projects model data that are already in MOD from the previous planning cycle and submit corrections and modifications as necessary to the MOD. MISO planning staff will verify these MOD data submittals to make sure that model data match with project and facilities details in Transmission Projects database. Transmission Owners also make any changes or corrections to equipment ratings though the MOD data submittal process.

MOD load data is updated for the selected planning study years and seasons based on the load forecast data collected and/or projected by the Transmission Owners at the substation level. Transmission Owners update these load data and profiles though MOD. MISO also collects load forecast data from LSEs/Network Customers and the MOD load forecast information based on Transmission Owner input is compared with load forecast data collected from LSEs/Network Customers at the beginning of the planning cycle.

New generator information coming out of the Generator Interconnection process is also used to update the MOD. MISO planning staff uses the available Generator Interconnection study information to update the MOD for new units. Any unit retirement information available through the SSR study process is also used to update the MOD.

MISO planning staff also makes any changes to transaction and area interchanges based on the transaction data from OASIS and new information available through TSR Study process.

External system in MOD is updated based on the latest NERC series models and also based on any updates available from neighboring coordinated systems.

3.2.1.3 Preliminary Base Model Review

Once the data submittal process is complete, MISO planning staff creates preliminary base models based on the specific model requirements for different planning functions and horizons for stakeholder review. These preliminary models are posted to the MISO Planning/Models ftp site: <https://www.midwestiso.org/Planning/Models/Pages/Models.aspx>]. The schedule for review and feedback is posted on the ftp site along with the models and typically has the timelines shown in Table 3.2-1 below.

3.2.1.4 Develop Base Models for Planning Studies

Any additional model updates and corrections needed are submitted through MOD by the appropriate data submitters described above. MISO planning staff then posts the Base Models for different planning functions on the ftp site.

Table 3.2-1: Model Development Timeline, Key Milestones, and Responsibilities (Occurs between August and January of each Year on Schedule provided by MISO)

Activity	Responsibility
(A) Initiate base model development for the next planning cycle	
Determine base model study years and seasons for the next planning cycle	MISO planning staff, SPM/PS/PAC
Solicit model update input	MISO staff
(B) Update models	
Submit project files/idevs for new Appendix C projects	Transmission Owners
Review Appendix A, and Appendix B projects in MOD (processed during previous planning cycle) and submit corrections and modifications as necessary	Transmission Owners
Submit equipment rating updates and other model corrections	Transmission Owners
Submit Transmission Owner collected/projected load forecast data to MOD on a substation basis	Transmission Owners

	Collect load forecast data from LSEs/Network Customers - *MOD load forecast information is compared with load forecast data collected from LSEs/Network Customers at the beginning of the planning cycle*	MISO planning staff, LSEs
	Submit new generator information, unit retirement information (through SSR study process), and generator profile changes to MOD	MISO planning staff, Transmission Owners
	Update Transaction data based on information from OASIS and TSR Study process	MISO planning staff
	Update the external system from the latest NERC series update and/or updates available from neighboring coordinated systems	MISO planning staff
(C) Preliminary Base Model Review		
	Output preliminary base models based on the specific model requirements for different planning functions	MISO planning staff
	Post models for review on the MISO Planning/Models ftp site	MISO planning staff
	Stakeholder review of preliminary models	Stakeholders
(D) Develop Base Models for Planning Studies		
	Submit additional model updates corrections through MOD based on model review feedback	MISO planning staff, Transmission Owners
	Post revised base models on the ftp site	MISO planning staff

Fig 3.2-1: Planning Model Development - MOD Input/Output